1. (Cancelled)

2. (Cancelled)

3. (Cancelled)

4. (Cancelled)

5. (Currently Amended) The detector according to claim [[1]] 22, further comprising a light guide.

6. (Original) The detector according to claim 5, wherein the light guide comprises scintillator material.

7. (Currently Amended) The detector according to claim [[2]] 23, further comprising a collector electrode connected before the scintillator.

8. (Original) The detector according to claim 7, wherein the scintillator and the collector electrode are controllable potentials, independently of each other.

9. (Previously Presented) The detector according to claim 7, wherein the collector electrode is arranged and adapted for application of a variable potential, positive with respect to a potential at which a sample is held.

10. (Previously Presented) The detector according to claim 7, wherein the scintillator comprises a conductive coating, further comprising current amplifiers that are connected to at least one of the collector electrode and to the conductive coating of the scintillator.

11. (Previously Presented) The detector according to claim 10, wherein the conductive coating of the scintillator is arranged and adapted to have a potential applied with respect to the collector electrode so that a gas cascade arises between the collector electrode and the conductive coating.

12. (Currently Amended) The detector according to claim [[1]] 22, further comprising a needle electrode or an electrode of thin wires on a sample side of the scintillator.

13. (Currently Amended) The detector according to claim [[1]] 22, further comprising ~~a scintillator and~~ an electrode surrounding the scintillator in a form of a pot that tapers conically to a point on a side remote from the scintillator and comprises an opening on a side remote from the scintillator.

14. (Cancelled)

15. (Cancelled)

16. (Currently Amended) The scanning electron microscope according to claim [[15]] 32, wherein at pressures in the sample chamber below a changeover pressure between 10^{-3} hPa and 10^{-2} hPa, a potential of greater than 1 kV positive with respect to the potential of the sample is applied to the scintillator, and at pressures in the sample chamber above the changeover pressure, a potential quantitatively smaller than 1 kV positive with respect to the potential of the sample is applied to the scintillator.

17. (Currently Amended) The scanning electron microscope according to claim [[15]] 32, the detector further comprising a collector electrode, and an electrical potential of varying polarities being applicable to the collector electrode.

18. (Previously Presented) The scanning electron microscope according to claim 16, wherein at pressures above the changeover pressure in the sample chamber, a potential of 0 V or ±400 V with respect to the potential of the sample is applied to the collector electrode.

19. (Withdrawn) A method for the detection of the products of reciprocal effects in a particle beam device under variable pressure conditions, comprising the step that under high vacuum conditions the light arising when the products of interaction strike a scintillator, and the step that at ambient pressure or low vacuum conditions, the light arising when the products of interaction interact with gas molecules, are detected with the same photodetector and then evaluated.

20. (Withdrawn) The method according to claim 19, comprising the step of using a detector according to claim 1.

21. (Previously Presented) The scanning electron microscope according to claim 16, wherein the potential is quantitatively smaller than 0.5 kV.

22. (New) Detector for a particle beam device to be used in the sample chamber of the particle beam device, comprising:

a scintillator,

the scintillator comprising an electrically conductive coating which is designed in strip or grid form,

a voltage supply by which a high voltage potential is applicable to the electrically conductive coating, and

a photodetector,

wherein the detector is arranged and adapted to detect electrons and light, and

wherein the detector is operable at high vacuum as well as at pressures over 10^{-3} hPa in the sample chamber.

23. (New) The detector of claim 22, wherein with high vacuum in the sample chamber, the detector is operated to detect electrons, and wherein at pressures above 10^{-3} hPa the detector is operated to detect light.

24. (New) Detector for a particle beam device to be used in the sample chamber of a charged particle beam device, comprising:

a scintillator,

the scintillator comprising an electrically conductive coating which is permeable to light,

a voltage supply by which a high voltage potential is applicable to the electrically conductive coating, and

a photodetector,

wherein the detector is arranged and adapted to detect electrons and light, and

wherein the detector is operable at high vacuum as well as at pressures over 10^{-3} hPa in the sample chamber.

25. (New) The detector of claim 24, wherein with high vacuum in the sample chamber, the detector is operated to detect electrons and wherein at pressures above 10^{-3} hPa the detector is operated to detect light.

26. (New) A particle beam device, comprising:

a particle beam optical system generating a focused charged particle beam,

a sample chamber, and

a detector,

wherein the charged particle beam is operable at high vacuum as well as at pressures over 10^{-3} hPa in the sample chamber,

wherein the detector comprises

a scintillator,

the scintillator comprising an electrically conductive coating which is permeable to light,

a voltage supply by which a high voltage potential is applicable to the electrically conductive coating, and

a photodetector,

wherein the detector is arranged and adapted to detect electrons and light.

27. (New) The detector of claim 26, wherein with high vacuum in the sample chamber, the detector is operated to detect electrons and wherein at pressures above 10^{-3} hPa the detector is operated to detect light.

28. (New) A particle beam device, comprising:

a particle beam optical system generating a focused charged particle beam,

a sample chamber, and

a detector,

wherein the charged particle beam is operable at high vacuum as well as at pressures over 10^{-3} hPa in the sample chamber,

wherein the detector comprises

a scintillator,

the scintillator comprising an electrically conductive coating which is designed in strip or grid form,

a voltage supply by which a high voltage potential is applicable to the electrically conductive coating, and

a photodetector,

wherein the detector is arranged and adapted to detect electrons and light.

29. (New) The detector of claim 28, wherein with high vacuum in the sample chamber, the detector is operated to detect electrons and wherein at pressures above 10^{-3} hPa the detector is operated to detect light.

30. (New) The particle beam device of claim 26, wherein the particle optical system is an electron optical system generating a focused electron beam.

31. (New) The particle beam device of claim 28, wherein the particle optical system is an electron optical system generating a focused electron beam.

32. (New) A particle beam device comprising:

a sample chamber,

a particle beam optical system generating a focused charged particle beam,

wherein the charged particle beam is operable at varying pressures in the sample chamber,

a pressure meter arranged in the sample chamber, and

a detector, the detector comprising a scintillator and the scintillator comprising an electrically conductive coating, and whereby the detector is arranged and adapted to detect electrons and light,

the detector further comprising a voltage supply by which a high voltage potential is applicable to the electrically conductive coating,

a control by which the application of electrical potential to the electrically conductive coating is controlled in dependence of the pressure in the sample chamber.